

CLAIMS

What is claimed is:

1. A hulling apparatus for substantially removing an outer hull portion of a food product from an inner shell portion of said food product, said hulling apparatus comprising:
 - a main frame assembly having a plurality of upright frame members and a plurality of transverse frame members;
 - a moveable support frame slidably mounted to said main frame for movement of said moveable support frame relative to said main frame;
 - a jack assembly operationally attached to said moveable support frame to move said moveable support frame;
 - a pair of shaped components having a first shaped component rotatably attached to said main frame and a second shaped component attached to said moveable support frame, said first shaped component substantially disposed in said second shaped component so as to define a hulling chamber between said pair of shaped components, said hulling chamber having a product path therebetween for passage of said food products through said hulling apparatus during movement of said first shaped component and/or said second shaped component relative to each other; and

a contact element attached to said first shaped component, at least a portion of said contact element disposed in said hulling chamber between said first shaped component and said second shaped component and configured to engage said food products so as to remove said outer hull portion of said food products from said inner shell portion while passing said food products through said hulling chamber.

2. The hulling apparatus according to claim 1, wherein said moveable support frame is slidably connected to one or more of said upright frame members.

3. The hulling apparatus according to claim 2, wherein said moveable support frame comprises a pair of vertical channel members slidably mounted in spaced juxtaposition on a pair of upright frame members and a cross-member disposed between said pair of vertical channel members.

4. The hulling apparatus according to claim 1 further comprising a support member attached to said main frame above said moveable support frame and a bottom frame member spatially opposite said support frame below said moveable support frame.

5. The hulling apparatus according to claim 4, wherein said first shaped component is rotatably disposed between said support member and said bottom frame.

6. The hulling apparatus according to claim 1, wherein said first shaped component and said second shaped component are conically shaped so as to define a substantially conical hulling chamber therebetween.

7. The hulling apparatus according to claim 1 further comprising means for rotating said first shaped component.

8. The hulling apparatus according to claim 7, wherein said means for rotating said first shaped component includes a motor and a gear assembly configured to rotate a drive shaft attached to said first shaped component.

9. The hulling apparatus according to claim 1, wherein said first shaped component has a shaped cap member for directing said food products into said hulling chamber.

10. The hulling apparatus according to claim 1, wherein said second shaped member includes one or more screened panels, each of said screened panels having a plurality of openings therein for passing at least a portion of said outer hull portion of said food products from said hulling chamber after separation from said food products by said contact element.

11. The hulling apparatus according to claim 10, wherein said screened panels have at least one downwardly extending spiral member engageable by said food products in said hulling chamber so as to guide movement of said food product along said product path.

12. The hulling apparatus according to claim 1, wherein said second shaped component has at least one downwardly extending spiral member engageable by said food products in said hulling chamber so as to guide movement of said food product along said product path.

13. The hulling apparatus according to claim 1 further comprising a skirt member at one end of said second shaped component to direct said food products into an outlet after removing said outer hull portion from said food products in said hulling chamber.

14. The hulling apparatus according to claim 1, wherein said jack assembly comprises a pair of worm gear screw jacks attached to said moveable support frame.

15. The hulling apparatus according to claim 1, wherein said hulling apparatus employs gravity to pass said food products along said product path and through said hulling chamber.

16. The hulling apparatus according to claim 1, wherein said food products are walnuts or pecans and said outer hull portion is relatively softer than said inner shell portion of said food product.

17. The hulling apparatus according to claim 1, wherein said contact element has one or more brush assemblies, each of said brush assemblies having a plurality of bristles.

18. The hulling apparatus according to claim 14, wherein each of said one or more brush assemblies comprises a panel configured to be removably attached to said first shaped component, said bristles mounted to said panel so as to project into said hulling chamber during operation of said hulling apparatus.

19. The hulling apparatus according to claim 1, wherein said outlet discharges said inner shell portion of said food products to a rotating washer assembly.

20. A hulling apparatus for substantially removing an outer hull portion of a food product from an inner shell portion of said food product, said hulling apparatus comprising:

a main frame assembly having a plurality of upright frame members and a plurality of transverse frame members;

a moveable support frame slidably mounted to said main frame for movement of said moveable support frame relative to said main frame;

a jack assembly operationally attached to said moveable support frame to move said moveable support frame;

a pair of shaped components having a first shaped component rotatably attached to said main frame and a second shaped component attached to said moveable support frame, said first shaped component substantially disposed in said second shaped component so as to define a hulling chamber between said pair of shaped components, said hulling chamber having a product path therebetween for passage of said food products through said hulling apparatus during movement of said first shaped component and/or said second shaped component relative to each other, said second shaped member having one or more screened panels, each of said screened panels having a plurality of openings therein for passing at least a portion of said outer hull portion of said food products from said hulling chamber;

a contact element attached to said first shaped component, at least a portion of said contact element disposed in said hulling chamber between said first shaped component and said second shaped component and configured to engage said food products so as to remove said outer hull portion of said food

products from said inner shell portion while passing said food products through said hulling chamber, said contact element having one or more brush assemblies, each of said brush assemblies having a plurality of bristles; and

means for rotating said first shaped component.

21. The hulling apparatus according to claim 20, wherein said moveable support frame is slidably connected to one or more of said upright frame members, said moveable support frame having a pair of vertical channel members slidably mounted in spaced juxtaposition on a pair of upright frame members and a cross-member disposed between said pair of vertical channel members.

22. The hulling apparatus according to claim 20 further comprising a support member attached to said main frame above said moveable support frame and a bottom frame member spatially opposite said support frame below said moveable support frame, said first shaped component being rotatably disposed between said support member and said bottom frame.

23. The hulling apparatus according to claim 20, wherein said first shaped component and said second shaped component are conically shaped so as to define a substantially conical hulling chamber therebetween.

24. The hulling apparatus according to claim 20, wherein said means for rotating said first shaped component includes a motor and a gear assembly configured to rotate a drive shaft attached to said first shaped component.

25. The hulling apparatus according to claim 20, wherein said first shaped component has a shaped cap member for directing said food products into said hulling chamber.

26. The hulling apparatus according to claim 20, wherein said screened panels have at least one downwardly extending spiral member engageable by said food products in said hulling chamber so as to guide movement of said food product along said product path.

27. The hulling apparatus according to claim 20 further comprising a skirt member at one end of said second shaped component to direct said food products into an outlet after removing said outer hull portion from said food products in said hulling chamber.

28. The hulling apparatus according to claim 20, wherein said jack assembly comprises a pair of worm gear screw jacks attached to said moveable support frame.

29. The hulling apparatus according to claim 20, wherein said hulling apparatus employs gravity to pass said food products along said product path and through said hulling chamber.

30. The hulling apparatus according to claim 14, wherein each of said one or more brush assemblies comprises a panel configured to be removably attached to said first shaped component, said bristles mounted to said panel so as to project into said hulling chamber during operation of said hulling apparatus.

31. A method of operating a hulling apparatus to substantially remove an outer hull portion of a food product from an inner portion thereof, said method comprising the steps of:

(A) depositing a plurality of said food products into an inlet of said hulling apparatus;

(B) rotating a first shaped component of a pair of shaped components, said first shaped component substantially disposed in a second shaped component of said pair of shaped components so as to define a hulling chamber therebetween;

(C) contacting said outer hull portion of said food products with a contact element mounted on said first shaped component to substantially remove said outer hull portion of said food products;

(D) passing said outer hull portion of said food products separated from said inner shell portion through one or more openings in said second shaped component;

(E) transporting said inner shell portion of said food products along a product path to an outlet for further disposition; and

(F) raising or lowering said second shaped component on a moveable support frame to increase or decrease the size of said hulling chamber.

32. The method according to claim 31, wherein said moveable support frame is slidably connected to one or more of said upright frame members.

33. The method according to claim 33, wherein said moveable support frame comprises a pair of vertical channel members slidably mounted in spaced juxtaposition on a pair of upright frame members and a cross-member disposed between said pair of vertical channel members.

34. The method according to claim 31, wherein said first shaped component and said second shaped component are conically shaped so as to define a substantially conical hulling chamber therebetween.

35. The method according to claim 31, wherein said hulling apparatus has a motor and a gear assembly configured to rotate a drive shaft attached to said first shaped component.

36. The method according to claim 31, wherein said second shaped member has one or more screened panels, each of said screened panels having a plurality of openings therein.

37. The method according to claim 36, wherein said screened panels have at least one downwardly extending spiral member engageable by said food product in said hulling chamber so as to guide movement of said food product along said product path.

38. The method according to claim 31, wherein said second shaped component has at least one downwardly extending spiral member engageable by said food product in said hulling chamber so as to guide movement of said food product along said product path.

39. The method according to claim 31, wherein said transporting step employs gravity to pass said food product along said product path and through said hulling chamber.

40. The method according to claim 31, wherein said contact element has one or more brush assemblies, each of said brush assemblies having a plurality of bristles.

41. The method according to claim 40, wherein each of said one or more brush assemblies comprises a panel configured to be removably attached to said first shaped component, said bristles mounted to said panel so as to project into said hulling chamber during operation of said hulling apparatus.